ATTACHMENT S40304K £54

SAA09PP03-001 REY. E B/L 8/30 MPS LH2, LOA SYSTEM

Critical Item:

Pressure Regulator

Find Number:

A105939

2

Criticality Category:

SAA No:

09PP03-001

System/Area: LH2 MPS/LOA

NASA

Part No: 79K80005-3

PMN/ Name: Anti-Ice Panel

572-0685-5 Helfum

Mfg/

Tescon/

Drawing/

Part No: 26-1023-54-271

Sheet No:

79K06063/79K40023

Function: Sets the dome pressure for regulator A105942 which supplies GHe for the LH2 and LOX prepress line anti-icing purges and for the Orbiter-to-ET disconnect cavity purge.

Critical Failure Mode: Regulates low. FM. No. 09PP03-001.023

Failure Effect: Loss of the ET LH2 and LOX prepress line anti-icing GHe purges and Orbiter-to-ET disconnect cavity purge. Possible damage to the Orbiter TPS. Failure is detectable by pressure transducer A106946 which monitors the output of regulator A105942.

# Acceptance Rationale

## Design:

- o This regulator is operated within all design specifications.
- o This component is only Criticality Category 2 when the ambient temperature is 36°F or below because the unheated backup helium supply is not effective at these temperatures.
- o Component Specifications:

	Rated	<u>Actual</u>
Pressure (psig)	6000	6000/750
Flow (scfm)	N/A	N/A
Temperature (°F)	-20 to +250	Ambient on the MLP

o The burst pressure is 4 times rated pressure (24,000 psig).

S 40304K \$57 = 3~ SAA09PP03-001 REV. E B/L 8/30 MPS LH2, LOA SYSTEM

# Pressure Regulator, A105939 (Continued)

o The pressure regulator body and filter are constructed of 300 series SST, the seats are KEL-F-81, the 0-rings are made of a fluorocarbon elastomer, and the seals are per MIL, AMS or NAS.

#### Test/Inspection:

- o File VI verifies the following:
  - Functional operation of the primary purge prior to each launch and at component replacement. The purge is verified via pressure switch indication and must satisfy a temperature specification after heater activation.
  - Functional operation of the redundant purge prior to each launch and at component replacement. The purge must satisfy a purge pressure specification.
- o The manufacturer's certification test requirements included the foilowing tests:
  - Proof
  - Leak
  - Functional
- o Drawing 79K12402 Requirements:
- o The regulator will be functionally tested by LPS with each use.
- o This drawing requires that the component be tested annually and at component replacement. Test is a creepage test.

## Failure History:

O PRACA - There were 6 Problem Reports for this type component found in the PRACA Data Base.

No failures found in the critical failure mode.

o GIDEP - The GIDEP Failure Data Interchange System has been researched, and no data on this component was found.

